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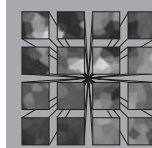
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The relationship between stress and quality of life in psychiatric outpatients

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Summary

Stress is the subjective feeling produced by events that are uncontrollable or threatening. Stress factors are coded on a separate axis of the DSM-IV classification system when they influence the diagnosis, treatment, and prognosis of psychiatric disorders. The relationship between stress and the psychosocial outcome measure quality of life (QOL), that has become a topic of growing interest in medical and psychiatric practice, is hardly examined in psychiatric outpatients. Therefore, in the present study, this relationship was investigated in a population of psychiatric outpatients (n = 410) with a broad spectrum of psychiatric disorders. Stress was assessed with the Everyday Problem Checklist (EPCL). QOL was measured with the World Health Organization (WHO) QOL Assessment Instrument (WHOQOL-100). The study population experienced considerable rates and intensities of stress, that were significantly higher compared with normative groups derived from a random sample of the Dutch population. Even after a correction for the presence of psychopathology, stress explained an amount of the variance of all aspects of QOL. It is concluded that in addition to the presence of psychopathology, stress plays a significant role in determining QOL. This justifies the classification of stress on a separate axis of DSM-IV. It is advisable to consider stress more systematically in psychiatric assessment and treatment. Copyright © 2006 John Wiley & Sons, Ltd.

Key Words

stress; quality of life; psychiatric outpatients; WHOQOL-100; EPCL

Introduction

Quality of life (QOL) has become a topic of growing interest in medical and psychiatric practice (Katching & Krautgartner, 2002). Recent studies show that psychiatric outpatients experience a poorer QOL compared with members of

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the general population (Masthoff, Trompenaars, Van Heck, Hodiamont, & De Vries, 2006). The body of knowledge about the complex relationship between the QOL of psychiatric outpatients and its determining factors is growing. Demographic characteristics explain only a relatively small part of the variance of subjective experienced QOL (Trompenaars, Masthoff, Van Heck, Hodiamont, & De Vries, 2005). The presence of specific psychiatric disorders (e.g. affective disorders, anxiety disorders, schizophrenia) and personality disorders is negatively related to QOL (Bobes & González, 1997; Schneier, 1997; Simon, 2003; Masthoff *et al.*, 2006). In addition to the above-mentioned factors, a potential determinant of QOL is experienced stress.

Stress is coded on a separate axis in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders: Axis-IV (DSM-IV-TR; American Psychiatric Association, 2000). It is the subjective feeling produced by events that are uncontrollable or threatening. Stress is not part of the situation itself; stress refers to how people respond to a particular situation (Larsen & Buss, 2005). Stressors create a feeling of being overwhelmed and often produce opposing tendencies. Although the results of major life events are fascinating, researchers on stress have gone on to study new questions (Larsen & Buss, 2005). One line of research starts with the observation that major life events are, thankfully, fairly infrequent in our lives. It seems that the major sources of stress in most people's lives are what are termed daily hassles (DeLongis, Folkman, & Lazarus, 1988; Lazarus, 1991). Minor daily hassles can be chronic and repetitive. Such daily hassles can be constantly irritating, though they do not initiate the same general adaptation syndrome evoked by some major life events. Persons with a lot of minor stress in their lives suffer more than expected from psychological and physical symptoms (Larsen & Buss, 2005).

To the best of our knowledge, the relationship between stress and QOL in psychiatric outpatients has not been explicitly investigated before. Therefore, the aim of the present study was to investigate this relationship in psychiatric outpatients. A priori it was hypothesized that stress would be negatively correlated to QOL. Whether and in which amount stress explained QOL variance in addition to the presence of psychopathology was not clear. Therefore, this investigation was of an exploratory nature.

Materials and methods

Patients

The study was conducted at GGZ Midden-Brabant, the community mental health centre in Tilburg, the Netherlands, after approval by the local ethics committee. Participants were outpatients of Dutch ethnic origin (in order to prevent language and/or cultural bias), aged 21–50 years (this age criterion was set to match the criteria of one of the questionnaires used), referred to the centre during a 1 year period in the period from 1 March 2001 till 1 March 2002. Potential participants entered the study through an at random procedure in which 30 percent of all referrals were sent directly for psychiatric evaluation and administration of the questionnaires. This selection procedure was performed because of an *a priori* agreement upon time investment by the investigators. Written informed consent was obtained. Exclusion criteria were inability to undergo the investigation protocol due to severe mental illness, illiteracy, dyslexia, mental retardation, problems with sight or hearing, or cerebral damage.

Measures

Stress. Stress was assessed with the Dutch Everyday Problem Checklist (EPCL) (Vingerhoets & Van Tilburg, 1994), a validated version of the Daily Hassles Scale (Kanner, Coyne, Schaeffer, & Lazarus, 1981; Vingerhoets, Jeninga, & Menges, 1989). The EPCL consists of 114 items concerning daily hassles experienced in the last 2 months. It also measures the intensity of each hassle on a scale from zero to three, yielding the number of hassles experienced and the total intensity of these hassles (maximum score 342). In order to provide a measure for appraisal of stress, the mean intensity score of the EPCL is calculated (total intensity of the experienced hassles divided by the total number of experienced hassles). The EPCL has two subscales that represent (1) hassles that are dependent on the functioning of the person (28 items) and (2) hassles that are independent from the functioning of the person (21 items). For both subscales, three values can be calculated: the number of hassles experienced, the total intensity of these hassles, and the mean intensity score. Normative groups for the EPCL were derived from a random sample of the Dutch

population ($n = 1106$; male: 45.6 per cent; mean age: 36.5 years, standard deviation, $SD = 6.3$; female: 54.4 per cent; mean age: 35.2 years, $SD = 6.3$). These data were collected as part of a larger study called 'Psychological and psychobiological determinants of sickness and health', performed at the Department of Medical Psychology of the Free University of Amsterdam (Vingerhoets & Van Tilburg, 1994). These normative groups were categorized according to sex and occupational level. Three levels of occupation were assessed: level 1 (unskilled and skilled labourers), level 2 (lower employees and the self-employed), and level 3 (middle employees and higher professions). The EPCL has satisfactory psychometric properties (Vingerhoets & Van Tilburg, 1994).

Quality of life (QOL). The World Health Organization (WHO) QOL Assessment Instrument (WHOQOL-100) (WHOQOL group, 1994; Dutch version, De Vries & Van Heck, 1995) was used. This 100-item questionnaire is a generic multidimensional measure for subjective assessment of QOL. It is designed for use in a wide spectrum of psychological and physical disorders. The same four-factor structure of the WHOQOL-100, which was described in earlier studies (Masthoff, Trompenaars, Van Heck, Hodiamont, & De Vries, 2005; Power, Bullinger, Harper, & the WHOQOL Group, 1999; WHOQOL group, 1998) was used: physical health, psychological health, social relationships, and environment. The items are attached to a five-point Likert scale. The time of reference is the previous 2 weeks. The WHOQOL-100 has good to excellent psychometric properties in patients with somatic diseases (Skevington, Carse, & Williams, 2001) as well as in patients with psychiatric disorders (Masthoff et al., 2005; Skevington & Wright, 2001). In this study, the facet overall QOL and general health and the domain scores were used.

DSM-IV, Axis-I diagnosis. For the Axis-I diagnosis, the Schedules for the Clinical Assessment in Neuropsychiatry (SCAN 2.1) were used (Giel & Nienhuis, 1996; Wing et al., 1990). The SCAN is a comprehensive semi-structured clinical diagnostic interview, developed under auspices of the WHO, aimed at the assessment and classification of psychiatric disorders in adults (Giel & Nienhuis, 1996; Wing, Sartorius, & Üstün, 1998; Wing et al., 1990). It has satisfactory psychometric properties (Rijnders et al., 2000).

DSM-IV, Axis-II diagnosis. For the Axis-II diagnosis, the Structured Clinical Interview for DSM-IV Axis-II Personality Disorders (SCID-II 2.0; First, Spitzer, Gibbon, & Williams, 1997; Spitzer, Williams, Gibbon, & First, 1990; Dutch version, Weertman, Arntz, & Kerkhofs, 2000) was used. This is a semi-structured interview with 140 items, organized by diagnosis, covering the 10 personality disorders included in DSM-IV Axis-II and the two personality disorders listed in the DSM-IV Appendix (i.e. diagnoses requiring further study). The instrument provides categorical diagnoses as well as dimensional scores for each disorder and has good psychometric properties (Maffei et al., 1997).

Statistical procedures

The nine different EPCL scores were calculated for the study population. One-sample t -tests ($p < 0.001$ after Bonferroni correction) were used to compare scores of male and female psychiatric outpatients separately with normative groups males and females (random samples of the Dutch population). Independent sample t -tests ($p < 0.001$ after Bonferroni correction) were used to compare EPCL scores of male participants with scores of female participants. Analyses of variance (one-way ANOVA's with *post hoc* Scheffé multiple comparison tests; $p < 0.001$ after Bonferroni correction) were used to compare EPCL scores of subgroups of participants which were classified according to the three occupational levels. Regression analyses were performed to determine the amount of QOL variance that was explained by the different scores on the EPCL. Psychopathology, represented by the factors caseness (presence of a diagnosis according to DSM-IV classification), presence of an Axis-I diagnosis, presence of an Axis-II diagnosis, and presence of co-morbidity (Axis-I and Axis-II diagnosis simultaneously present) was entered as independent variables in block 1 (method enter). The nine EPCL scores were entered in block 2 (method stepwise). The data were processed using the Statistical Package for the Social Sciences (SPSS, version 12.0 for Windows).

Results

Patients

From the persons referred to the outpatient clinic of the centre ($n = 3892$; 40.4 per cent male), 1559

were potential participants (42.2 per cent male). Nearly 30 per cent ($n = 438$) of these patients were randomly selected to enter the study (male: 42.7 per cent; mean age: 34.7 years, SD = 8.3; female: 57.3 per cent; mean age: 32.8 years, SD = 8.2). This selection procedure was performed because of an a priori agreement upon time investment by the investigators. From this group, 20 participants were unable to undergo the research protocol, due to severe psychotic disorder ($n = 7$), major depressive episode ($n = 9$), dyslexia ($n = 2$) or mental retardation ($n = 2$). Eight patients refused to participate (four diagnosed with antisocial personality disorder; four with substance related disorder). Thus, 410 participants completed the test booklet (total response rate: 93.6 per cent; male: 41.2 per cent; mean age: 34.8 years, SD = 8.4; female: 58.8 per cent; mean age: 32.5 years, SD = 8.2). For these 410 participants, Axis I and Axis II diagnoses according to DSM-IV were determined. Of these 410 participants, 278 had at least one Axis-I diagnosis, 206 had at least one Axis-II diagnosis, 130 suffered from co-morbidity, and 54 had no diagnosis according to DSM-IV classification. The results are presented in Table I.

The participants were categorized according to the three occupational levels: level 1 (male: $n = 82$; female: $n = 25$), level 2 (male: $n = 25$; female: $n = 64$), and level 3 (male: $n = 18$; female: $n = 19$). Of the male participants, 44 (26.0 per cent)

had no occupation at the moment of investigation, while this was the case for 84 female participants (34.9 per cent).

Findings

Male psychiatric participants had higher scores on all aspects of the EPCL compared with the male normative group (see Table II). The same was found for female psychiatric participants (see Table III).

No differences were found between male and female participants on any of the EPCL scales. Within the groups of male and female participants, no significant differences were found on any of the EPCL scales for the three occupational groups.

As is shown in Table IV, regression analyses revealed that the total of psychopathology factors (caseness, presence of an Axis-I diagnosis, presence of an Axis-II diagnosis, and presence of co-morbidity) explained some QOL variance, ranging from 8 per cent (social relationships) to 11 per cent (psychological health). The standardized regression coefficients (β) of the individual psychopathology factors were not significant. Experienced stress explained additional amounts of the variance of QOL, ranging from 7 per cent (social relationships) to 15 per cent (physical health). The EPCL scales total intensity of hassles,

Table I. Axis I and Axis II diagnosis according to DSM-IV classification for the total outpatient sample ($n = 410$).

Axis I diagnosis	<i>n</i> *	Axis II diagnosis	<i>n</i> *
Pervasive developmental disorder	4	Paranoid personality disorder	4
ADDB disorder [†]	5	Schizoid personality disorder	6
Substance related disorder	27	Schizotypal personality disorder	2
Psychotic disorder	4	Antisocial personality disorder	23
Mood disorder	113	Borderline personality disorder	49
Anxiety disorder	73	Histrionic personality disorder	6
Somatoform disorder	9	Narcissistic personality disorder	18
Sexual disorder/gender identity disorder	9	Avoidant personality disorder	47
Eating disorder	15	Dependent personality disorder	24
Impulse-control disorder	5	Obsessive-compulsive personality disorder	21
Adjustment disorder	36	Personality disorder not otherwise specified	59
Other disorder	9	Postponed diagnosis	12
Other conditions [‡]	53	No diagnosis	196
No diagnosis	89		

* The figures represent frequencies of recorded diagnoses. Due to co-morbidity (i.e. the classification of more than one diagnosis on Axis I or Axis II) the totals of recorded diagnoses per Axis exceed the total number of participants.

[†] ADDB disorder, Attention-deficit and disruptive behavior disorder.

[‡] Other conditions, other conditions that may be a focus of clinical attention (mostly V-codes).

Relationship between stress and quality of life

Table II. Scores on the EPCL: norm group males ($n = 504$) versus male outpatients ($n = 169$).

Scales of the EPCL	Norm group Mean (SD)	Outpatients Mean (SD)	Comparison			95 per cent confidence interval of the difference
			<i>t</i>	df	<i>p</i>	
Total number of hassles	18.50 (13.0)	37.34 (18.0)	13.64	168	<0.001	16.11 to 21.56
Total intensity of hassles	25.11 (23.1)	69.17 (42.2)	13.58	168	<0.001	37.65 to 50.43
Total mean intensity of hassles	1.23 (0.5)	1.79 (0.5)	13.78	168	<0.001	0.48 to 0.64
Number of dependent hassles	3.79 (3.5)	10.33 (5.3)	16.07	168	<0.001	5.74 to 7.34
Intensity of dependent hassles	5.34 (6.3)	20.17 (12.9)	14.91	168	<0.001	12.86 to 16.79
Mean intensity of dependent hassles	1.16 (0.8)	1.89 (0.6)	15.68	168	<0.001	0.64 to 0.83
Number of independent hassles	3.79 (2.9)	5.99 (3.8)	6.84	168	<0.001	1.44 to 2.60
Intensity of independent hassles	6.07 (5.4)	10.64 (8.7)	6.86	168	<0.001	3.26 to 5.89
Mean intensity of independent hassles	1.35 (0.7)	1.70 (0.7)	6.40	168	<0.001	0.25 to 0.43

Table III. Scores on the EPCL: norm group females ($n = 602$) versus female outpatients ($n = 241$).

Scales of the EPCL	Norm group Mean (SD)	Outpatients Mean (SD)	Comparison			95 per cent confidence interval of the difference
			<i>t</i>	df	<i>p</i>	
Total number of hassles	15.88 (12.4)	33.87 (15.6)	17.96	240	<0.001	16.01 to 19.96
Total intensity of hassles	22.27 (22.1)	63.75 (37.3)	17.27	240	<0.001	36.75 to 46.21
Total mean intensity of hassles	1.24 (0.3)	1.80 (0.5)	17.52	240	<0.001	0.50 to 0.62
Number of dependent hassles	4.20 (3.8)	9.78 (4.7)	18.36	240	<0.001	4.98 to 6.18
Intensity of dependent hassles	6.31 (7.0)	19.16 (11.7)	17.09	240	<0.001	11.37 to 14.33
Mean intensity of dependent hassles	1.27 (0.8)	1.88 (0.6)	16.18	240	<0.001	0.53 to 0.68
Number of independent hassles	2.64 (2.4)	5.25 (3.1)	13.30	240	<0.001	2.23 to 3.00
Intensity of independent hassles	4.06 (4.5)	9.08 (6.6)	11.82	240	<0.001	4.18 to 5.86
Mean intensity of independent hassles	1.23 (0.9)	1.62 (0.7)	8.39	240	<0.001	0.30 to 0.48

total mean intensity of hassles, number of independent hassles, and intensity of dependent hassles explained the highest amounts of QOL variance (see Table IV).

Discussion

In the present study, the relationship between stress, which is coded on a separate axis of DSM-IV, and the psychosocial outcome measure QOL was investigated in a population of psychiatric outpatients suffering from a broad spectrum of psychiatric disorders. Stress was assessed with the EPCL and QOL with the WHOQOL-100.

The psychiatric outpatients (males and females) had higher scores on all aspects of the EPCL compared with the norm groups of healthy controls. This seems to be in accordance with the earlier finding that stress is a good predictor of health complaints (Vingerhoets & Van Tilburg, 1994).

Concerning the variables gender and occupational status, no significant differences were found on any of the EPCL scales. It seemed that other aspects, such as the presence of psychopathology were more important in explaining QOL variance. Furthermore, the sample sizes of some of the groups of participants that were subdivided according to gender and occupational status were rather small. This may also explain the finding that occupational status was not related to daily hassles.

The total of psychopathology factors explained some QOL variance, whereas the individual factors were not significant. It should be noted, however, that the factor psychopathology was only assessed in a crude manner (presence or absence of Axis-I and/or Axis-II diagnoses), which is a limitation of this study. In addition to psychopathology, experienced stress explained a significant amount of the variance of QOL, especially intensity and number of hassles. Thus daily

Table IV. Multiple regression analyses with QOL domains as dependent variables and psychopathology (block 1; method enter) and scales of the EPCL (block 2; method stepwise) as independent variables* ($n = 410$).

Dependent variable	Final model		Independent variable	Adjusted R^2 total	β
	F	p			
Physical health	19.98	<0.001	Psychopathology	0.10	n.s.
			Total mean intensity of hassles	0.21	-0.18
			Intensity of independent hassles	0.24	-0.18
			Total number of hassles	0.25	-0.16
Psychological health	20.50	<0.001	Psychopathology	0.11	n.s.
			Number of independent hassles	0.22	0.18
			Total mean intensity of hassles	0.23	-0.21
			Number of dependent hassles	0.25	-0.36
Social relationships	11.55	<0.001	Psychopathology	0.08	n.s.
			Total intensity of hassles	0.13	-0.69
			Intensity of independent hassles	0.14	0.33
			Intensity of dependent hassles	0.15	0.22
Environment	22.91	<0.001	Psychopathology	0.10	n.s.
			Total intensity of hassles	0.22	-0.29
			Mean intensity of independent hassles	0.24	-0.18
			Psychopathology	0.10	n.s.
Overall QOL and general health	17.80	<0.001	Intensity of dependent hassles	0.18	-0.20
			Total mean intensity of hassles	0.20	-0.17

* Only scales of the EPCL that explain an amount of variance of the different QOL factors are represented in this table.

† n.s. = not significant.

stress, which may be a consequence of behaviour related to psychopathology, has more impact on patients' QOL than psychopathology as such. A possible explanation for this finding may be that the presence of psychopathology is merely a risk-factor for winding up in stress-full situations, whereas the factor stress itself directly affects QOL. The findings of the present study justify the classification of stress on a separate axis of DSM-IV. Paying attention to stress in diagnostic procedures (e.g. using specific measures to assess stress), treatment policies (e.g. interventions directed at the improvement of stress-management), and programme evaluations is advised.

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